copper, sulphurets of bismuth, iron, and copper, globules of oxide of burnt iron, oxide of iron by heat or scale oxide, conducted the thermo current very well. Native peroxide of manganese and peroxide of lead conducted it moderately well.

809. The following are bodies, in some respect analogous in nature and composition, which did not sensibly conduct this weak current when the contact surfaces were small:—artificial grey sulphuret of tin, blende, cinnabar, haematite, Elba iron-ore, native magnetic oxide of iron, native peroxide of tin or tinstone, wolfram, fused and cooled protoxide of copper, per-oxide of mercury.

810. Some of the foregoing substances are very remarkable in their conducting power. This is the case with the solution of sulphuret of potassium (801) and the nitrous acid (804), for the great amount of this power. The peroxide of manganese and lead are still more remarkable for possessing this power, because the *protoxides* of these metals do not conduct either the feeble thermo current or a far more powerful one from a voltaic battery. This circumstance made me especially anxious to verify the point with the peroxide of lead. I therefore prepared some from red-lead by the action of successive portions of nitric acid, then boiled the brown oxide, so obtained, in several por-tions of distilled water, for days together, until every trace of nitric acid and nitrate of lead had been removed; after which it was well and perfectly dried. Still, when a heap of it in powder, and consequently in very imperfect contact throughout its own mass, was pressed between two plates of platinum and so brought into the thermo-electric circuit (801), the current was found to pass readily.

^f ii. *Inactive Conducting Circles containing a Fluid or Electrolyte*

811. De la Rive has already quoted the case of potash, iron and platina,[1] to show that where there was no chemical action there was no current. My object is to increase the number of such cases; to use other fluids than potash, and such as have good conducting power for weak currents; to use also strong and weak solutions; and thus to

accumulate the conjoint
experimental and argumentative evidence by which the great
question must finally be decided.

812. I first used the sulphuret of potassium as an electrolyte
of good conducting power, but chemically inactive (799) when

[1] *Philosophical Magazine,* 1837, xi. 275.